



The ILLINOIS ENGINEER

ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS

INCORPORATED

Affiliated with the National Society of Professional Engineers
631 East Green Street Champaign, Illinois



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SEPTEMBER, 1953

THE ILLINOIS ENGINEER—THIS MONTH

N. S. P. E. Dues Increase

In order that we may bring the engineering profession together as one unified whole, facing on a common front the problems which beset us in improving the social and economic welfare of the engineer—in order to accomplish these things, we need a strong National Society of Professional Engineers. One measure of the strength of any society is adequate funds to carry out its program.

By vote of the N.S.P.E. Board of Direction at Daytona Beach in June, national dues were increased from \$7.00 to \$10.00 per year. This means a total of \$20.00 per year to N.S.P.E. and I.S.P.E. instead of \$17.00.

The National Directors from Illinois went to the Richmond meeting in November, 1952, instructed by a majority of the state chapters to vote favorably for an increase in dues at that meeting. At that time the measure was defeated but the Board immediately voted to ask reconsideration of the increase on the part of the dissenting states. And as stated above, as a result of that reconsideration, the increase was approved at Daytona.

Actually then, it would seem that the dues increase has the approval of a majority of the I.S.P.E. membership. We hope that no member will begrudge the additional \$3.00 per year for the support of the one all-inclusive society, standing for engineering prestige and welfare.

W. A. OLIVER, Editor

MILITARY SERVICE WAIVER OF DUES

The Board of Direction on June 13, 1953 moved that "dues of members in active military service be waived upon request of member." Those belonging to the Society who have recently returned to civilian status from military service may resume paid-up standing by sending in a check for the present current years dues.

I hold every man a debtor to his profession;
from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto.

Sir Francis Bacon

PRESIDENT'S MESSAGE

"ACTIVE PARTICIPATION" in the affairs of ISPE is open to Young Engineers. As a young man, you can contribute new ideas and enthusiasm. When you join ISPE, you are associated (through ISPE affiliation with National Society of Professional Engineers) with Professional Engineers from 37 states, Puerto Rico and District of Columbia. You are, therefore, joining with over 30,000 professionally-minded men, who have seen the value and necessity of a truly professional organization for all Professional Engineers.

Your senior members are interested that you "individually" join with our many professional activities. Get your young engineer friend to join with us as an "Engineer-in-Training" or as a "Student Member." You and young engineers, as yourself, will be the Profession of tomorrow.

Robert F. Kail, Student Council President of Ohio Society, said: "Professional societies are an important part of an engineer's education. They are doing much in the way of helping the student to think professionally and to make them professionally conscious. They help to indoctrinate him with professional concepts and to teach him the legal aspects of his profession. They furnish the graduate-engineers the opportunity to help advance the profession and to better serve society through his profession."

NSPE believes that the Young Engineers should have legal recognition and should be associated with the professional movement during their formative years. NSPE has recommended that State Societies press for enactment of Engineers-In-Training provision in their respective state laws, which would give the engineering graduate recognition under the law and enable him to take the technical and academic phases of his examination while those subjects are still fresh in his mind.

The Legislative Committee of Illinois Engineering Council, in close harmony with ISPE was successful in getting an amendment to the Illinois Professional Engineering Act passed to provide for the Engineer-In-Training. Representative Willet introduced the bill to the Legislature and Governor Stratton signed it this past June 16.

SUBSCRIPTION RATES

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House Bill 451, defining the Act, authorizes the Director of Registration and Education to issue a license to any person who establishes that he has devoted a total of at least eight years to study, training and experience in the theory and practice of engineering and who has passed the examinations prescribed in Section 12. An applicant who has acquired at least four years toward the eight-year period shall be permitted to take the first part of the said prescribed examination (on academic work) and, if successful, shall be enrolled as an Engineer-In-Training.

The Engineer-In-Training enrollment shall be valid for a period of ten years, exclusive of any period of active military service in the armed forces of the United States. Upon completion of the required additional four years of professional experience, an Engineer-In-Training, upon payment of the required fee, shall be eligible to apply for the second part of the examination (professional experience) and, if successful, shall be issued a certificate of registration as a "Professional Engineer."

Young Engineer, you can avail yourself of this opportunity!

RAYMOND G. BRICHLER
President, ISPE

VOTE ON CONSTITUTIONAL AMENDMENT

The tellers committee who counted the ballots subsequent to the closing of the polls on July 27th report the vote on the two propositions as follows: Engineer-In-Training Constitutional Amendment—Yes, 356—No, 93—Blank, 5. Deletion of Sections 29 through 32 of the I.S.P.E. Code of Ethics—Yes, 439—No, 12—Blank, 7.

COLORADO CASE

The Supreme Court of Colorado has ruled that the 1951 engineering registration law of that state is invalid because it contains an unconstitutional delegation of legislative power to the registration board. The decision followed an original action by an individual to restrain the board from issuing licenses and publishing a roster indicating the branch of registration.

The Court observed that it was not expressing any opinion on the question whether the profession of engineering is subject to regulation by classification into branches and for the purpose of the decision assumed that the profession might conceivably be regulated in that form. However, the Court found objectionable the broad language of the statute, stating, "No definition of any particular branch of engineering is contained in the statute, and no standards are fixed and determined by which a classification could be made.

"No standards are fixed by the Act which shall be applied in determining the distinctions to be drawn between . . . various specializations of the broad field of engineering. Without question, many fundamental scientific principles are common to all of them, and every field of the profession overlaps into another. Without

standards fixed by the law, the discretion to declare what the law is, is delegated to the board. This cannot legally be done."

In addition to the objection on designation of branches, the Court found objectionable the authority vested in the board to determine **approved curriculum . . . from a school or college approved by the Board . . . engineering work of a character satisfactory to the Board . . . give credit for graduate study at its discretion . . . lawful practice . . .** and other language of this nature granting discretionary powers to the Board. (Objectionable words in the decision are shown in bold.)

The Court cited the rule of law it was following as: "The general assembly may not delegate the power to make a law; but it may delegate power to determine some fact or a state of things upon which the law, as prescribed, depends." And further, "The true distinction . . . is between the delegation of power to make the law, which necessarily involves a discretion as to what it shall be, and conferring authority or discretion as to its execution, to be exercised under and in pursuance of the law. The first cannot be done; to the latter no valid objection can be made."

The right to practice a profession, once legally granted, is within the rights protected by the Constitution of the United States and of the State of Colorado, which provide that no person shall be deprived of life, liberty or property, without due process of law, the Court held. "The profession of engineering is no 'ordinary trade or calling.' That profession also involves 'personal skill, presupposes a period of novitiate, intensive preparation, due examination and admission, and that the licentiate's sheepskin is solely his own'." The Court quoted approvingly a statement from an Idaho case, "Where the State confers a license upon an individual to practice a profession, trade or occupation, such license becomes a valuable personal right which cannot be denied or abridged in any manner except after due notice and a fair and impartial hearing before an unbiased tribunal."

Following this reasoning, the Court concluded that the complainant had been denied a valuable property right because he had been originally licensed to practice the profession of engineering without designation of branch under an earlier law. "It follows, therefore, that the legislature cannot by statute deny or abridge that right in any manner except for cause and 'after due notice and a fair and impartial hearing before an unbiased tribunal'."

A request for a rehearing has been filed with the Supreme Court by the registration board.

COST OF LIVING INDEX

The correction factor to be applied to the I. S. P. E. Schedule of Minimum Fees and Salaries was 190.9 for June, 1953. The factor is based upon the U. S. Department of Labor's most recent Consumer Price Index.

Dean William L. Everitt, Co-Inventor of Time Compressor

By ARTHUR R. WILDHAGEN

When the next national political campaign begins, an automatic "time compressor" for political speeches may be standard radio broadcasting equipment. Matter of fact, listeners won't miss a word when a recorded 45-minute speech has been slimmed down to fit a 30-minute broadcast spot, or an hour-and-a-quarter oration slipped into less than 60 minutes of air time.

The "time compressor" is not a figment of imagination—or hope. Such a machine exists. It has been invented at the University of Illinois. It can take speech or music and compress it without dropping a single syllable or note, and without changing the pitch as happens when you simply speed up a recording.

Some of the amazing applications include:

Radio programs "tailored" to fit broadcasting time.

"Talking books" for the blind, presenting information understandably at nearly twice present speed.

Unbelievable rapidity and precision in music, actually offering new musical experiences.

Conferences, conversations, airport control directions, and the like recorded on less tape and reviewed in much less time.

Faster presentation of facts in broadcasts beamed to behind the iron curtain, and therefore less danger to listeners.

Faster reports over long-distance telephone or radio.

New production opportunities for motion pictures and television.

New techniques for teaching.

New approaches to study speech, music, and language.

You can think up some more when you realize that the machine can both compress and expand sound, can even compress 90 per cent to an unintelligible rushing blur and then restore this to words you can understand.

In practical effect the machine actually will lengthen your life, for if you can hear a 60-minute talk in 50 minutes you've had the full experience and still have a 10-minute life bonus left. Multiply the possibilities for use of this device and you can see how several "experience years" may be added for you and your children.

Compressions of 10 per cent or even of 20 per cent pass unnoticed. Up to 50 per cent does not destroy understanding of speech. Music put through the machine has its tempo stepped up, but pitch and clarity of individual notes are unchanged. Precise fast effects beyond human ability now are possible.

Fred Waring, hearing the machine demonstrated, called it "fabulous" with "amazing possibilities for music and speech—not only in reproduction, but also in teaching. It makes possible many things we've always

dreamed of that so far have been impossible because of technical difficulties," he said.

Inventors of the "time compressor" are Prof. Grant Fairbanks, director of the Speech Research Laboratory at Illinois; Dean William L. Everitt of the College of Engineering; and Robert P. Jaeger, electronics technician, formerly at the University and now with a commercial laboratory.

The idea originated in Prof. Fairbanks' professional knowledge that the ear is faster than the mouth—that we can hear and understand a great deal faster than we can speak. Since the human speech organs can't be speeded up much, he found another way to fit sound to ear ability.

The problem was to produce a machine which would speed up sound automatically without making a fullback have the voice pitch of a May Queen—which is what happens if you simply record a voice and play it back faster.

After working out theoretical and mathematical principles, he made a tape recording, took out his scissors, and snipped the tape into small bits. Each covered a few hundredths of a second of the recording time. Then he threw every other one away and pasted the remaining ones back together.

The result was a little rough, but understandable even though half of the sound was in his waste basket. The important thing was that he had not altered the sound pitch—his fullback talked twice as fast but still sounded like a fullback. That was in 1950.

Then Prof. Fairbanks and the other two inventors developed the "time compressor" to discard portions of an incoming sound signal automatically, to push the retained portions together smoothly, and to keep the pitch of the resulting signal unchanged.

The machine has another important possibility. Instead of compressing time it can be used to compress the tones of a voice and then to expand them back to original understandability. This is an almost instantaneous process which may permit a telephone or radio circuit to carry many conversations where one now is carried.

This problem of "bandwidth reduction" has interested engineers for a long time. They have found various ways of making circuits do multiple duty, and now the compressor may offer another possibility of carrying more messages without building more expensive transmission facilities.

Interestingly, it took the "task force" of a speech psychologist and a couple of electronics engineers—a team such as could be found only in a great university with all these on one campus—to find the answer. Returns from the device will go back to the institution, since patents have been applied for by the University of Illinois Foundation.

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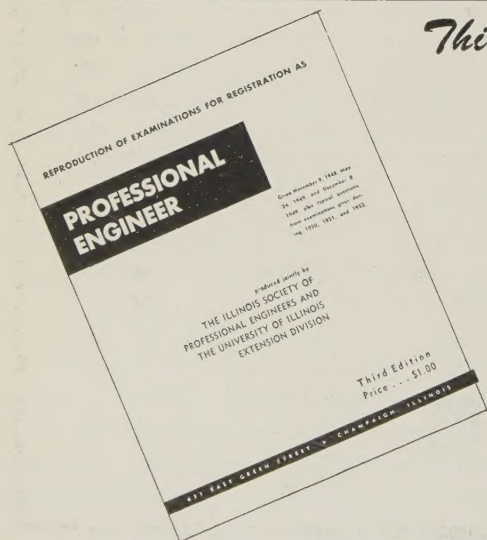
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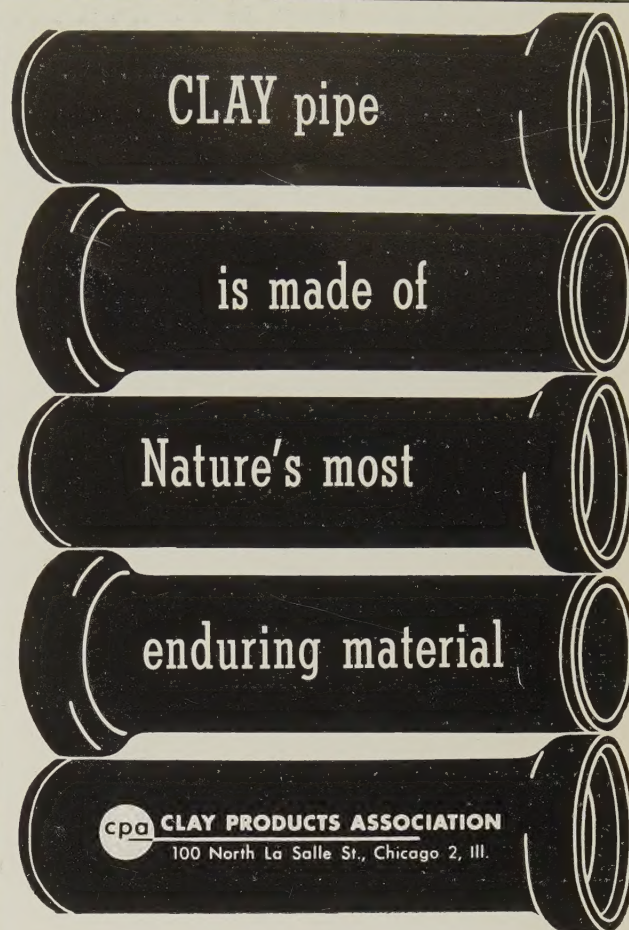


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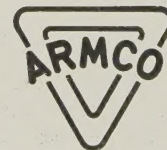
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OVER THE MANAGER'S DESK

September normally means the end of the vacation periods with the desire to get back to work. In order to make up for time lost during the summer months and as a result it should be the beginning period to put emphasis toward completing the projects started in the spring. Why not let E.S.P.S. help you find the man to complete your projects or let us help you find THAT position which will make you feel as an individual that you have made progress in completing some of the major projects of your career?

B. H. A.

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Chief Engr. M.S.C.E. 34. Five yrs. seven mos. structural design, drafting, foundations, steel bldg., reinforced concrete, piping. \$8400. Midwest. PE

Ind. Mgmt. Engr. M.S.B.E. 27. Four yrs. resp. for administration of industrial engineering activities. Four mos. layout of standard conveyor units for specialized requirements, determination of bills of materials. Nine mos. resp. for design of timber structures. \$8000. Midwest. PE

Staff Ind. Mgmt. Engr. 28. Two yrs. Plant and Staff. Development of cost control structures, company projects and surveys in all phases of Ind. engrg. Four yrs. make up operation and material process analysis, cost estimates, develop time standards. \$6500. U.S. PE

Chief Engr. M.B.A. 35. Twenty-seven mos. planning, training and directing activities of 240 Civil Serv. Insp. Four mos. determine feasibility of layouts, fixtures and equip. Three yrs. resp. for Ind. Engr. functions. \$7500. U.S. PE

Field Engr. C.E. 26. Fourteen mos. design and layout "Hump" yard trks., compute cuts and fills, estimating, designing sewerage systems and drainage ditches. Three mos. ran horizontal control for maps. \$5000. Chicago. PE

Field Engr. C.E. 27. Two yrs. design of highways, earth computations, setting of grades, alignment, etc. \$5500. U.S. P.E.

Field Engr. 28. Two yrs. field engr. on hwy., bridges, tunnels. Six mos. lead survey parties of subdivision, boundary locations. One yr. structural design and detailing on bldgs., bridges. \$5000. Midwest. PE

Draftsman. 27. Twenty-one mos. design, layout, and detail of speed reduction units. Three yrs. layout, detail and assembly of operating mechanisms and electrical appliances. \$5200. Chicago. PE

Constr. Supt. M.E. 24. Five mos. project engr. on insulation of low temperature liquid storage tanks. Two yrs. design of development aircraft. One yr. design of residential and commercial Air-cond., heating and ventilating systems. \$6700. Chicago. PE

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POSITIONS AVAILABLE

Research Metallurgist. Age: open. With several yrs. responsible supervisory exp. in development of machinery parts by the powder metallurgical process. Knowl. of automotive requirements helpful. Sal: \$15,000-\$18,000. Location: Midwest. D-8710

President. M.E. Degree or equiv. Age: 50-55. For a company operating 6 metal stamping plants. Must have 20 yrs. exp. in mass-production industry, pref. in fabrication of light metal and mech. rubber products for automotive mfgs. Min. 5 years. in top management responsible for organization, coordination and direction of mfg. sales, product devel., engrg., financial and management control operations. Sal: \$40,000 to \$50,000. Loc: Midwest. D-8711

Mechanical Engineer. Power. Desire grad. M.E. approx. 30-45 yrs. or age. Duties: involve supervision of 125 to 130 hourly employees. Equipment consists of boilers up to 200,000 lbs. per hour, turbo generators, pumps and air compressors. Sal: to \$500-650. Location: Ohio. C-1185(F)

Development Engineer. Some college engrg. Age: 22-60. Knowledge of engineering. Du-

ties: develop and supervise construction of new equipment and methods in products. Increase efficiency in present machines and products. For a manufacturer of drain tile. Salary: \$400-600 dep. on applicant. Employer will negotiate fee. Loc: Illinois. C-1187

Chief Mfg. Engr. M.E. Age: 32-38. 5 plus yrs. exp. in mfgs. small precision products. Knowledge of production equipment. Duties: responsibility for complete industrial engineering program and tooling activities. For a manufacturer of precision parts. Salary: \$8000 per yr. Employer will negotiate fee. Location: Chicago. C-1189

Production Manager. Grad. Chem. or Chem. Eng. 2 plus yrs. exp. in process industry foods or drugs. Duties: charge of all production for plant of 15 employees manufacturing drugs. Sal: \$450 Plus. Loc: Chicago. C-1190

Welding Engineer. Age: up to 55. Extensive knowledge of spot and resistance welding on sheet metal. Duties: processing and determining most economical methods in welded assemblies on sheet metal, some stainless steel and some other metals. For manufacturer of major appliances. Salary: \$500-700. per month. Loc: Chicago. C-1192(a)

Structural Engineer. Grad. C.E. or Struct. 5 plus yrs. in timber structures design exp. Duties: Must have structural engineer's license. Duties: in charge of engineering and promotional work in Chicago office. Good personality—call on arch., engrg., etc. promoting uses of timber. Salary: \$400-\$600. Employer might negotiate fee. Loc: Chicago. C-1193

Machine Development and Builder. M.E. Age: 30-40. 2 plus yrs. exp. in designing, developing and building automatic machinery. Knowledge of food industry or packaging. Duties: head up organization for production, development and sales of special packaging machinery. For a consultant of special machinery. Salary: \$400-600 per month. Employer will pay fee. Loc: Chicago S.W. Suburb. C-1194

Designer-Draftsman. 3 plus yrs. exp. in special machine design of sheet metal working field. Knowledge of gears, math. and angles. Duties: design and supervise two draftsmen in special machine development in sheet metal working field. For a manufacturer of special machinery. Salary: \$125 week. Employer will negotiate fee. Location: Chicago. C-1196